



Using *Google Earth* for educative purposes

8.1 Educational Technology:

F. Critical Thinking, Problem Solving, and Decision-Making

<http://njcccs.org/ContentAreaTabularView.aspx?code=8&Desc=+Technology>

For Today:

- What is a digital mapping tool? An introduction
- How can a digital mapping tool (such as Google Earth or GIS) add value?
- Demo: Google Earth

Middle School students reading various geography text books during class in 1927, at the University of Chicago Laboratory School. Emphasis on memorization. Difficult to layer data.



In the 1980s:

Database

"Not Easy to Interpret"

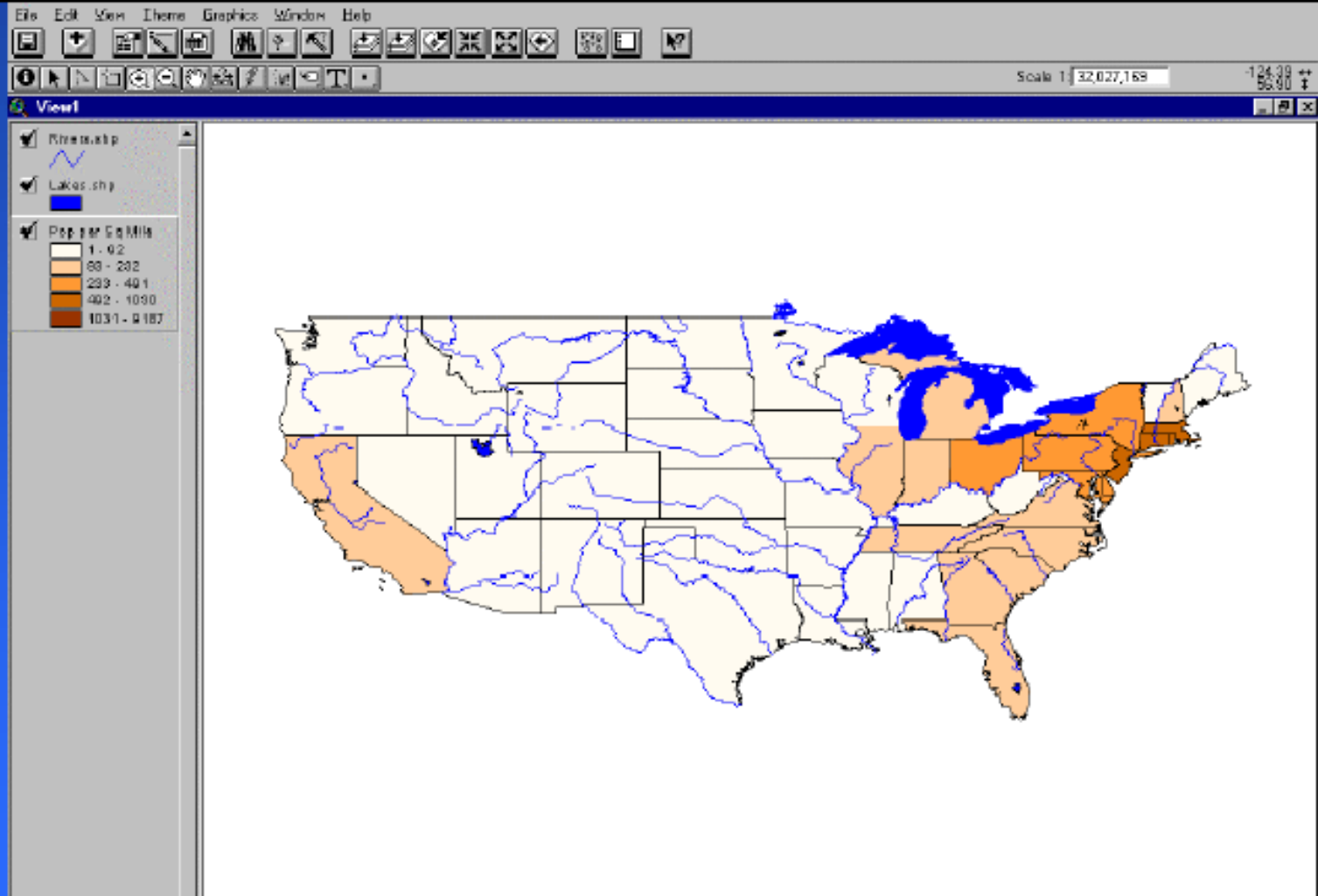
File Edit Table Field Window Help

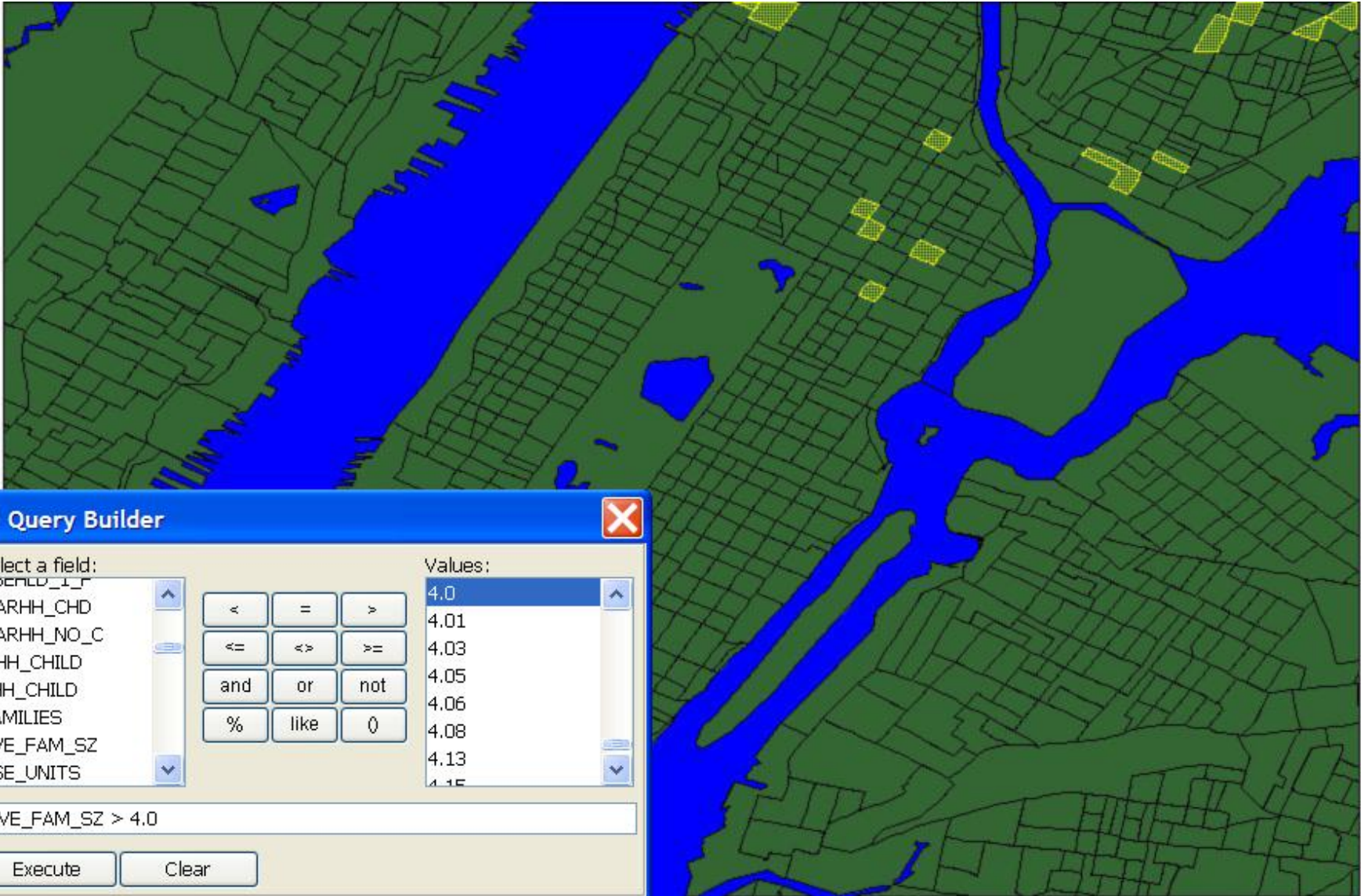
0 of 51 selected

Attributes of States.shp

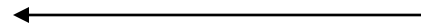
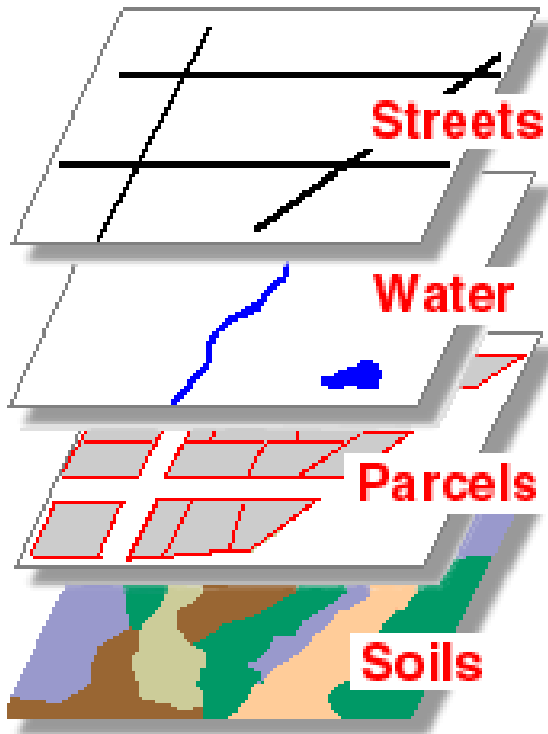
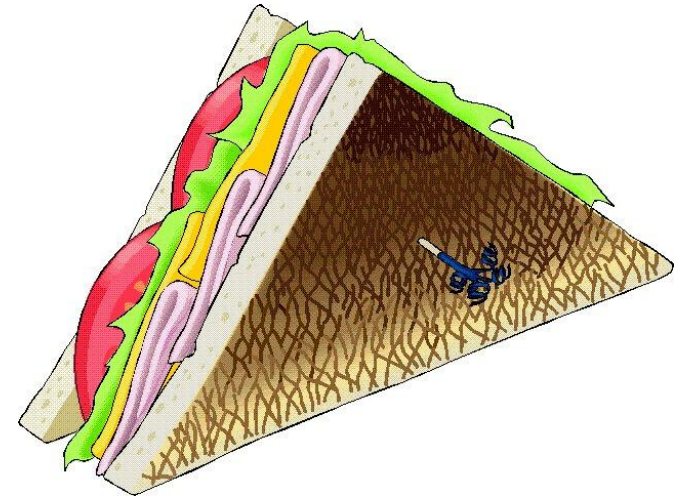
Shape	Area	State_name	State_fips	Sub_region	State_abbr	Pop1987	Pop1987	Pop97_num	Household	Male	Female	White	Black	Asian_pct	A
Polygon	67236.878	Washington	53	Pacific	WA	4866932	5904280	72	1872431	2413747	2452945	4308937	149801	81.483	2
Polygon	147236.028	Montana	30	Mtn	MT	799065	888723	5	306163	395768	403296	741111	2361	47679	
Polygon	32161.664	Maine	23	N Eng	ME	1227928	1244828	38	465312	597800	630078	1208360	5138	5988	
Polygon	70810.153	North Dakota	38	W N Cen	ND	638900	644782	9	240679	318201	320599	604142	3524	25917	
Polygon	77193.624	South Dakota	46	W N Cen	SD	696004	738549	9	259034	342498	353506	637515	3258	50575	
Polygon	97799.492	Wyoming	56	Mtn	WY	453588	484529	5	168939	227007	226581	427061	3636	9479	
Polygon	56098.066	Wisconsin	55	E N Cen	WI	4891769	5189395	87	1622118	2352935	2498834	4512523	244539	39387	
Polygon	83340.595	Idaho	16	Mtn	ID	1006749	1218819	12	369723	500956	505793	950451	3370	13780	
Polygon	9603.219	Vermont	50	N Eng	VT	562759	591699	59	210650	275492	287266	555089	1951	1696	
Polygon	84517.465	Minnesota	27	W N Cen	MN	4375099	4690647	52	1647653	2145163	2225816	4130385	94944	45808	
Polygon	97070.748	Oregon	41	Pacific	OR	2842321	3245429	29	1103312	1397073	1446248	2636787	46178	38486	
Polygon	9258.514	New Hampshire	33	N Eng	NH	1108252	1171443	120	411186	543544	565708	1067433	7196	2134	
Polygon	56257.220	Iowa	19	W N Cen	IA	2775755	2893263	49	1064325	1344802	1431953	2683090	48380	7349	
Polygon	8172.482	Massachusetts	25	N Eng	MA	6016425	6106984	736	2247110	2880745	3127690	5405374	300130	12241	1
Polygon	77328.337	Nebraska	31	W N Cen	NE	1578385	1660613	20	602363	768438	808846	1468568	57404	12410	
Polygon	48960.579	New York	36	Mid Atl	NY	17960455	18177296	370	6539322	8625679	9364782	13365255	2859065	62951	6
Polygon	45359.293	Pennsylvania	42	Mid Atl	PA	11861643	12051902	262	4495966	5694265	6187378	10520201	1089795	14730	1
Polygon	4976.434	Connecticut	09	N Eng	CT	3287116	3277113	661	1230479	1580873	1694243	2898353	274269	6854	
Polygon	1044.690	Rhode Island	44	N Eng	RI	1003464	989370	960	377977	491496	521999	917375	38861	4071	
Polygon	7507.302	New Jersey	34	Mid Atl	NJ	7730188	8018326	1030	2794711	3735665	3964503	6130465	1006825	14870	2
Polygon	36399.515	Indiana	18	E N Cen	IN	5544159	5974944	152	2065365	2680281	2855879	5020700	432082	12720	
Polygon	110667.293	Nevada	32	Mtn	NV	1201833	1652583	11	466257	611860	589593	1012695	78771	15637	
Polygon	84870.185	Utah	49	Mtn	UT	1722850	2034167	20	537273	825729	867091	1615845	11576	24283	
Polygon	157774.187	California	06	Pacific	CA	29760021	32197302	189	10381206	14897627	14962394	20524327	2208901	242164	28
Polygon	41192.862	Ohio	39	E N Cen	OH	10847115	11202691	263	4087546	5226340	5620775	9521756	1154836	20358	
Polygon	56297.954	Illinois	17	E N Cen	IL	11430602	11890619	209	4202240	5552239	5878369	8952978	1694273	21836	2
Polygon	68.063	District of Columbia	-11	S Atl	DC	606900	595027	5187	249634	262970	323890	179667	389604	1456	
Polygon	2094.508	Delaware	10	S Atl	DE	688168	731218	324	247497	322968	343200	539294	112480	2019	
Polygon	24228.213	West Virginia	54	S Atl	WV	1793477	1828932	74	688557	861536	931941	1725253	56295	2458	
Polygon	9738.753	Maryland	24	S Atl	MD	4761488	5108339	491	1748891	2318871	2462197	3333564	1188389	12972	1
Polygon	104099.108	Colorado	08	Mtn	CO	3294294	3985615	32	1282489	1631256	1663099	2905474	133146	27776	
Polygon	40318.777	Kentucky	21	E S Cen	KY	3665286	3506585	91	1379782	1765236	1900061	3351832	262907	5959	
Polygon	82198.436	Kansas	20	W N Cen	KS	2477574	2882833	30	944728	1214648	1282928	2231965	143076	21988	
Polygon	29819.194	Virginia	51	S Atl	VA	6192368	6729695	195	2291930	3030974	3153984	4791739	1162984	15362	1
Polygon	69831.624	Missouri	29	W N Cen	MO	5117073	5387753	73	1961206	2464315	2652758	4466228	548208	19836	
Polygon	113711.522	Arizona	04	Mtn	AZ	3825220	4620000	36	1300040	1810801	1954537	2903100	110524	206527	
Polygon	70002.392	Oklahoma	40	W S Cen	OK	3145585	3318622	45	1206135	1530819	1614476	2989512	233801	252420	
Polygon	48846.873	North Carolina	37	E S Cen	NC	6595917	7411329	138	2832922	3443422	3443422	4482222	93888		

In the 1990s: Visualization "Worth a Thousand Words"





Earth Sandwich

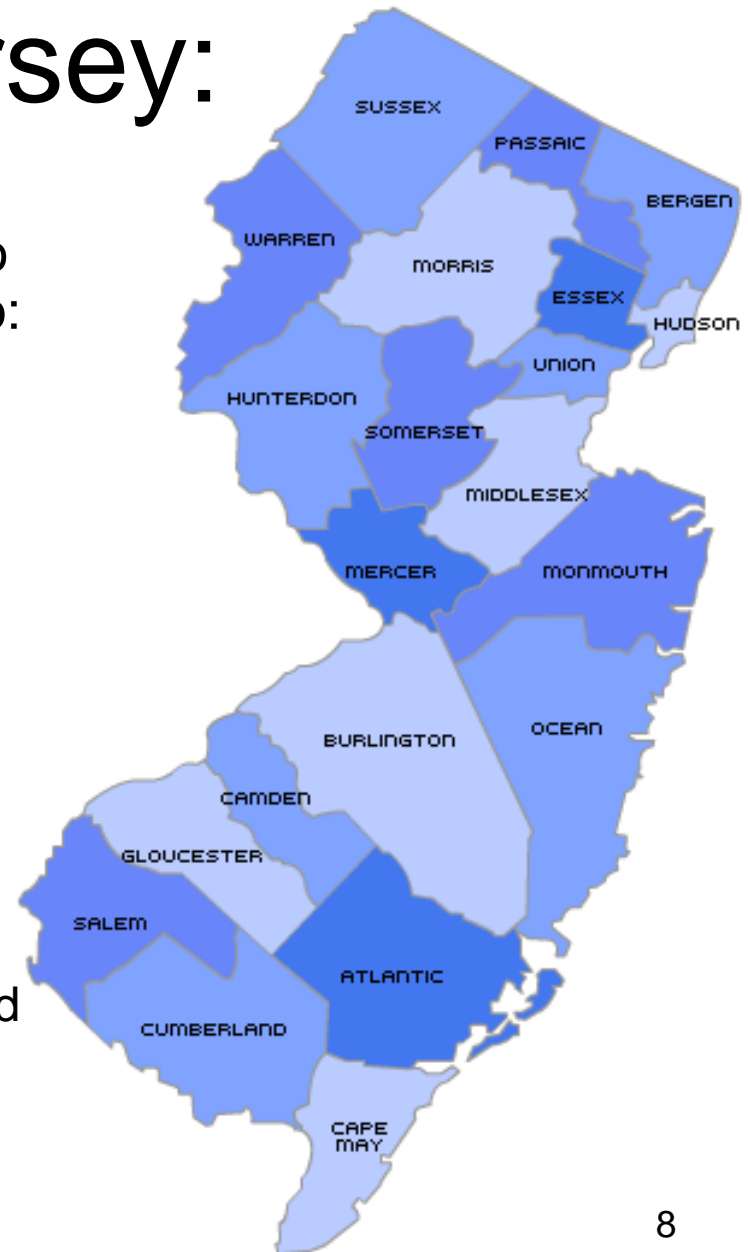


These four layers might be part of one city's geographic dataset. The layers all contain features located within the city's boundaries, but each one represents a distinct "theme."

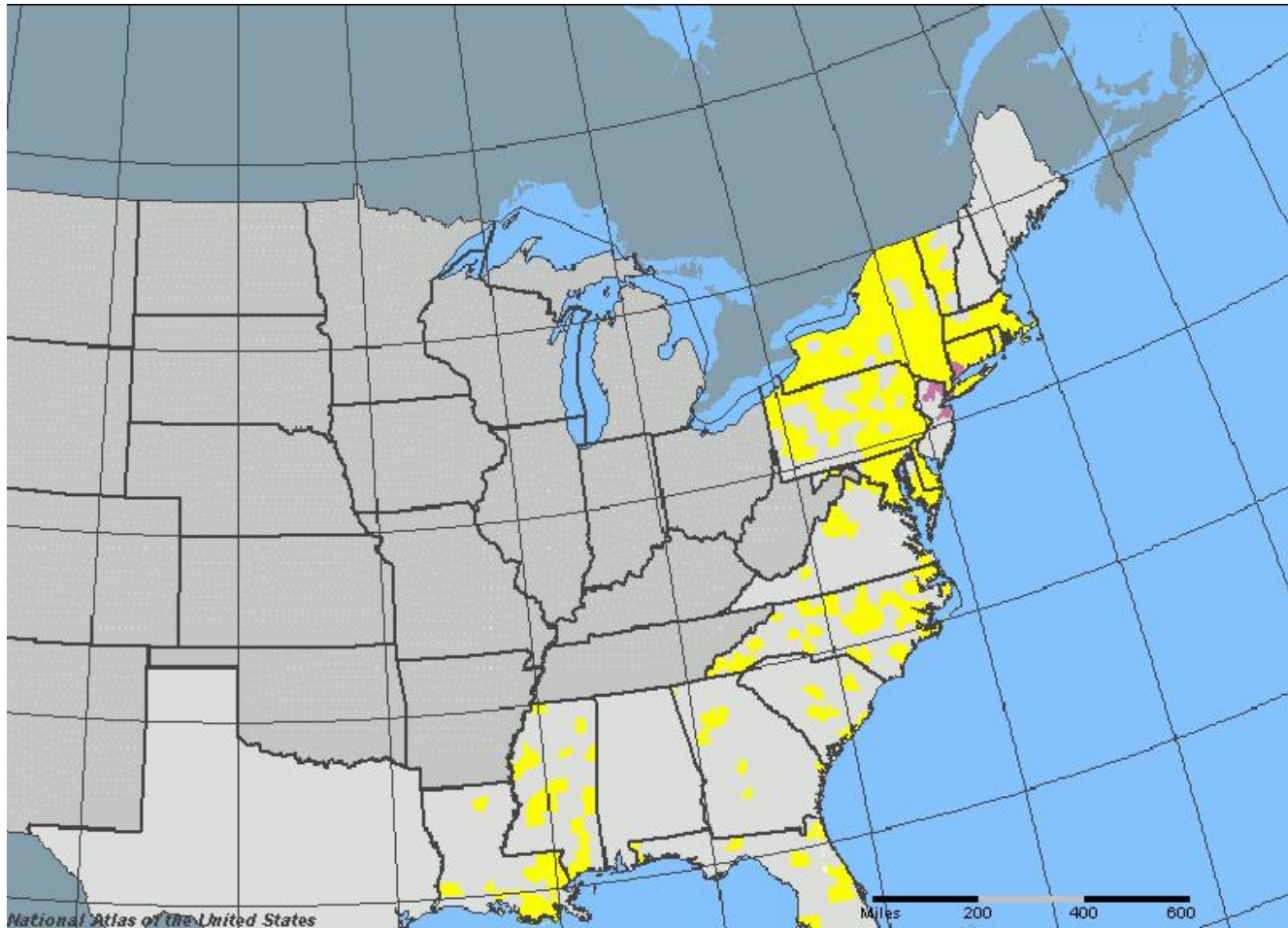
In New Jersey:

Digital maps can be used to enable us to more easily detect patterns pertaining to:

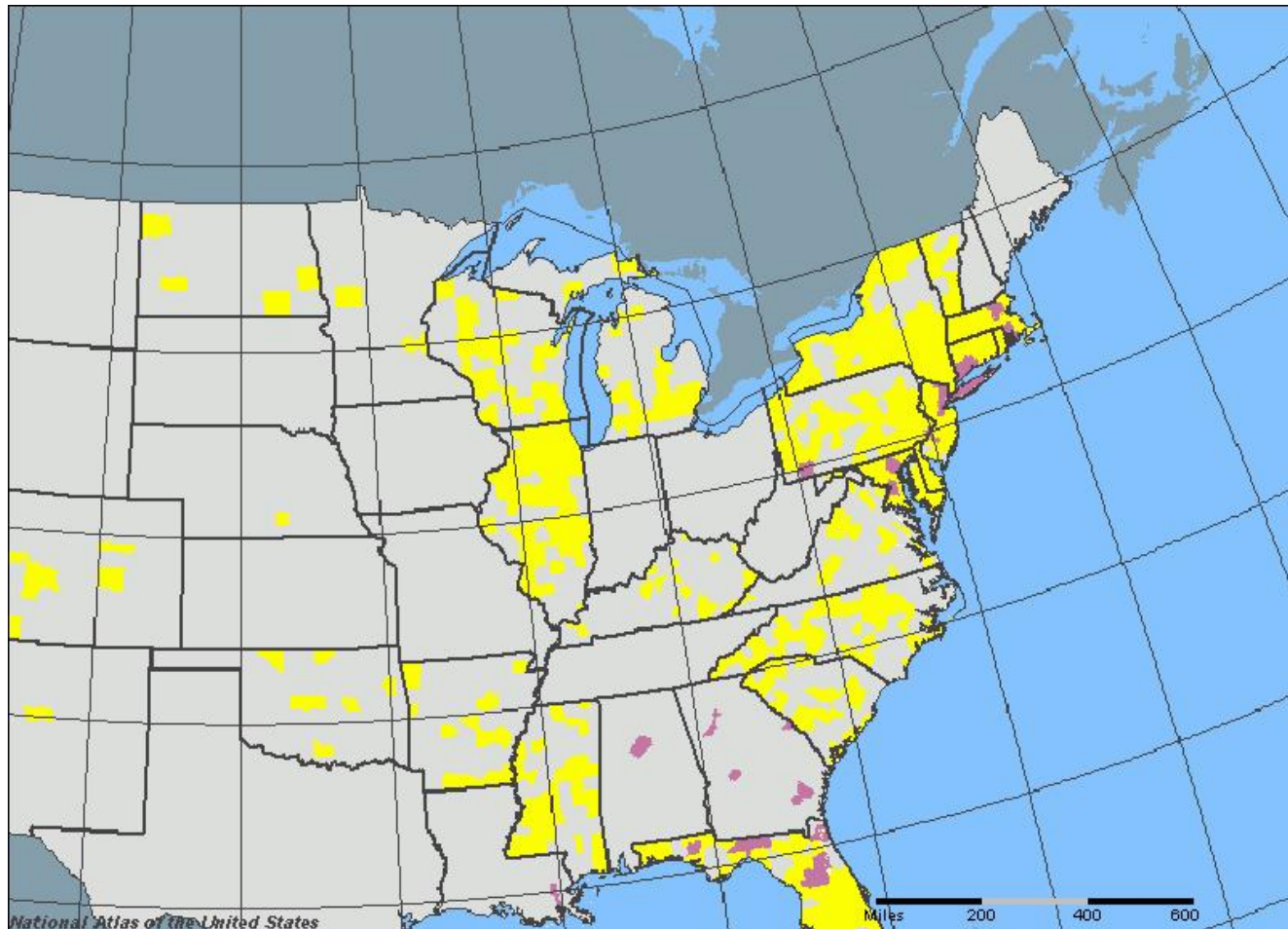
- census demographics
- public health concerns
- crime
- tax rates
- transportation routes
- pollution levels
- real estate development
- weather patterns
- gas / electric power consumption
- the impact of various types of natural and human made disasters.
- Etc.



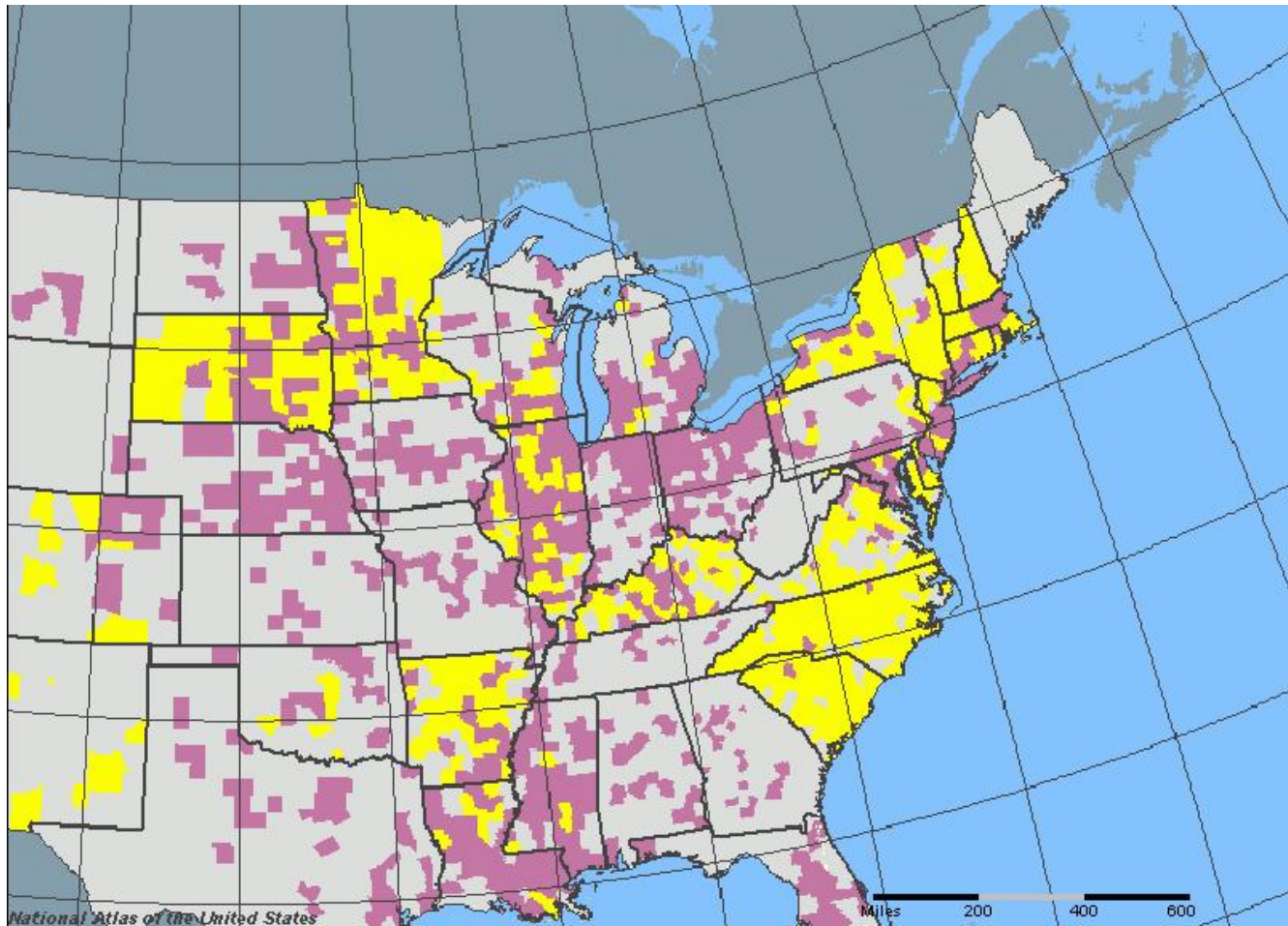
2000 West Nile Virus Cases



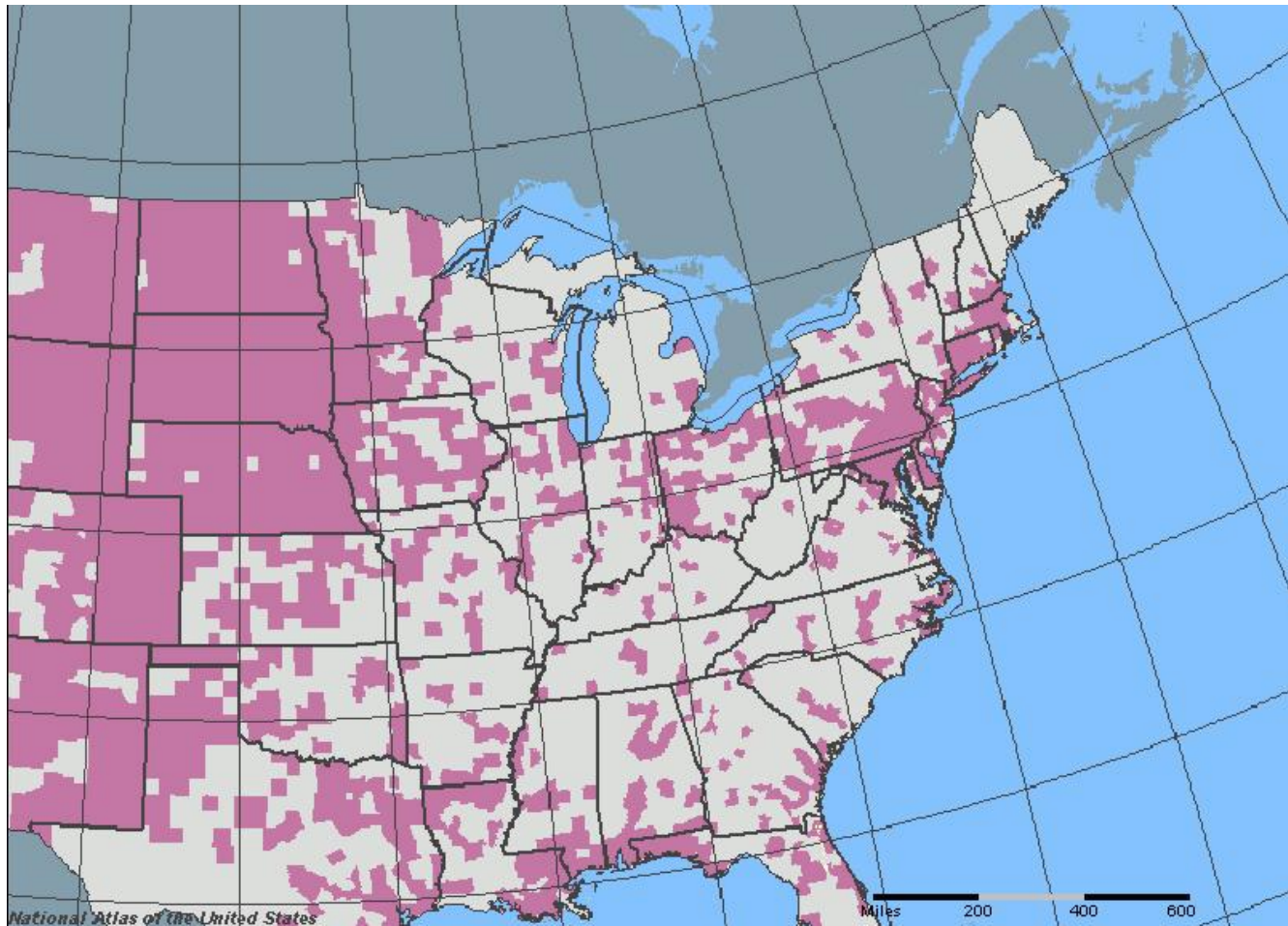
2001 West Nile Virus Cases



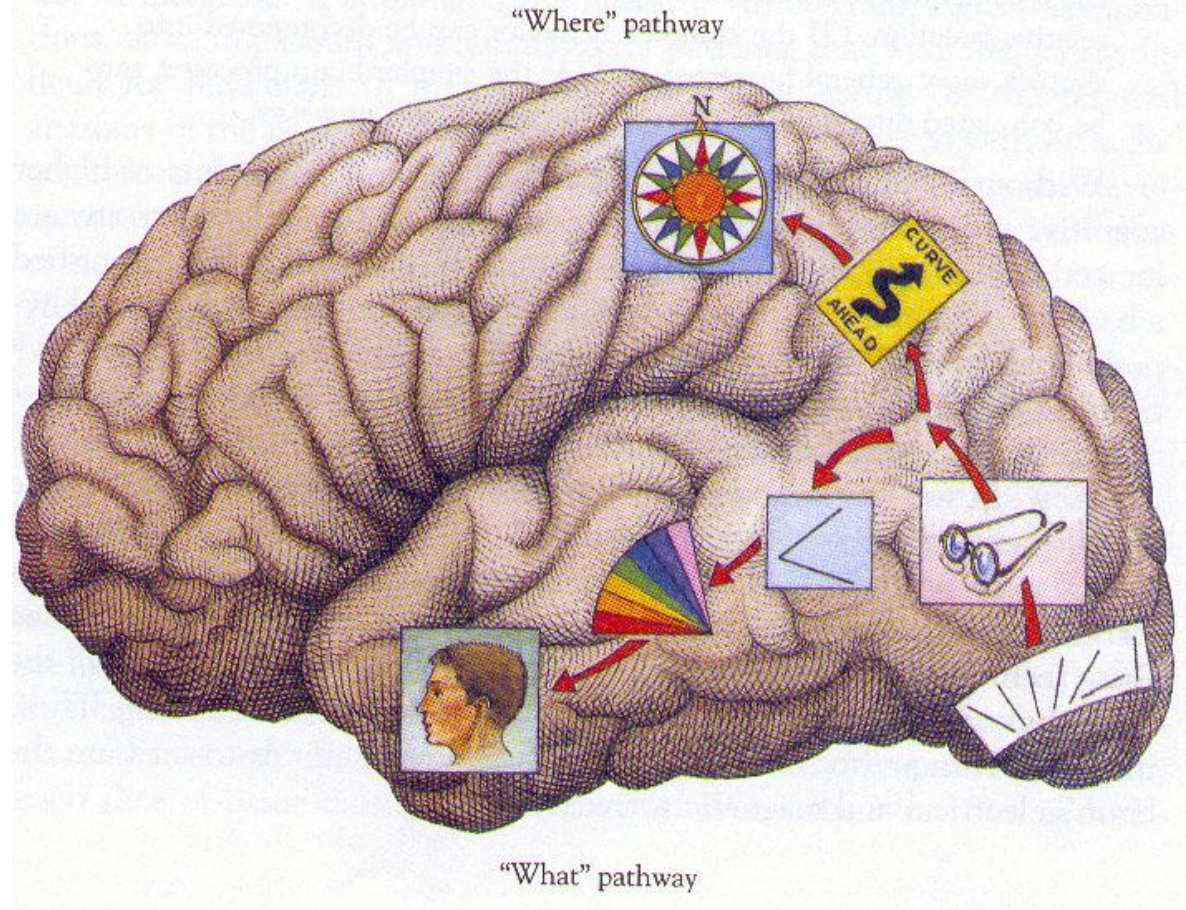
2002 West Nile Virus Cases



2003 West Nile Virus Cases



- Spatial Intelligence
not used
extensively
in schools

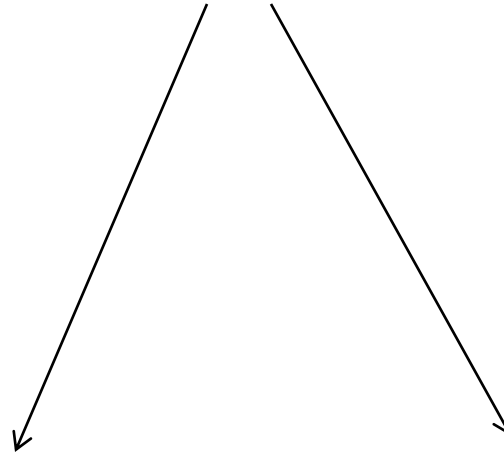




ESRI



Arc GIS



Google Earth



Google Maps

Google Earth

- [Virtual Globe](#) or geobrowser.
- Extension: KML (Keyhole Markup Language)
- Google Earth is free, and is very “user friendly.”
It requires
 - a fast Internet connection (Cable or LAN)
 - a computer with a graphics card(It will work on older computers, but will move very slowly).

Key concept: Adding images regarding Hurricane Katrina



Panoramio



in New Orleans, Louisiana (United States)

Photograph by [silebi](#)

[Upload your photos to Panoramio.com](#)

[Comment it](#)

Image © 2007 DigitalGlobe
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Streaming 100%

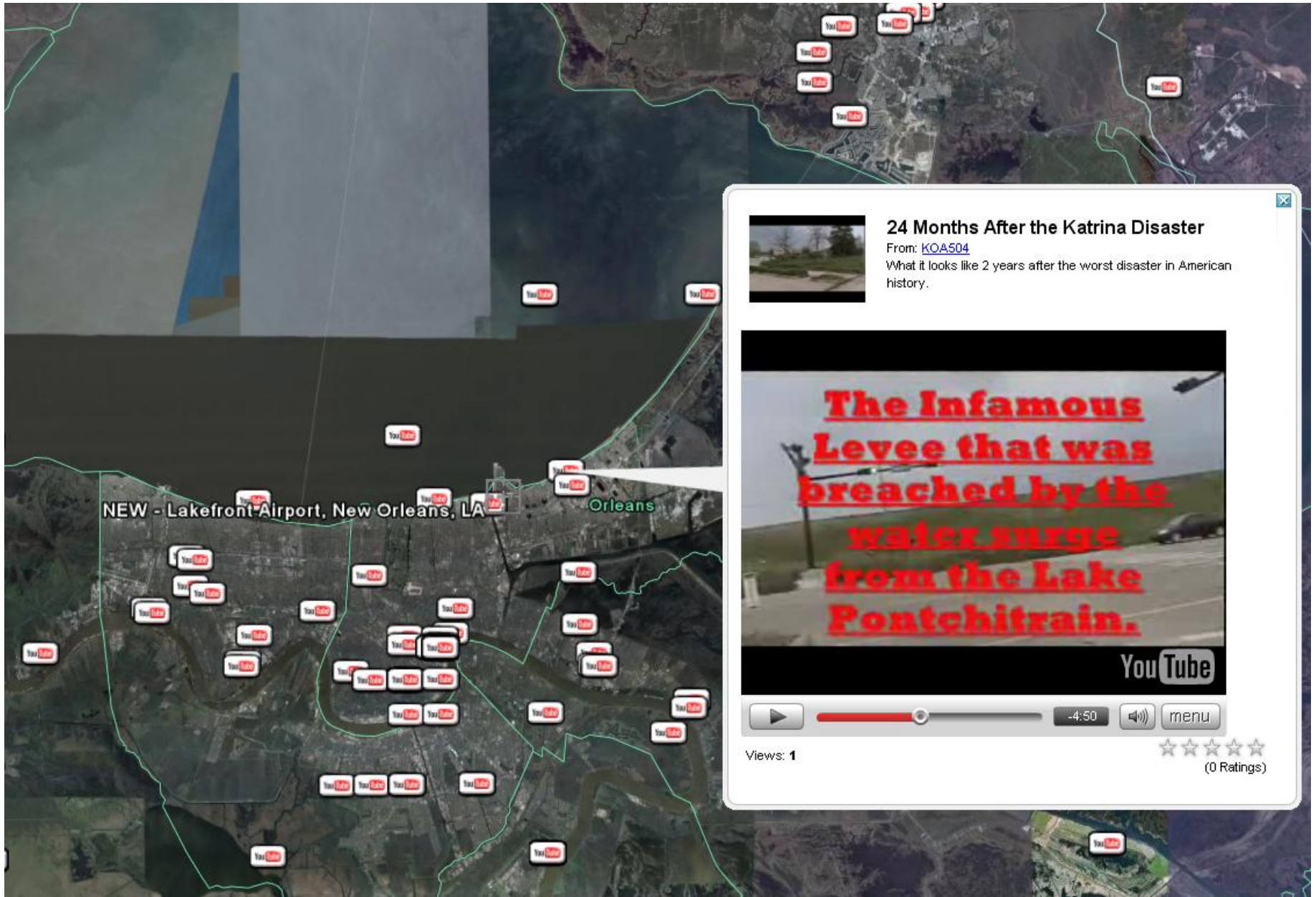
Pointer 29°57'34.28" N 90°01'08.85" W elev 3 ft

© 2007

Key concept: Studying satellite imagery. “Before and after” images: **After the Hurricane in 2005**



Key concept: Adding video from YouTube



24 Months After the Katrina Disaster

From: [KOA504](#)

What it looks like 2 years after the worst disaster in American history.

The Infamous Levee that was breached by the water surge from the Lake Pontchartrain.

YouTube



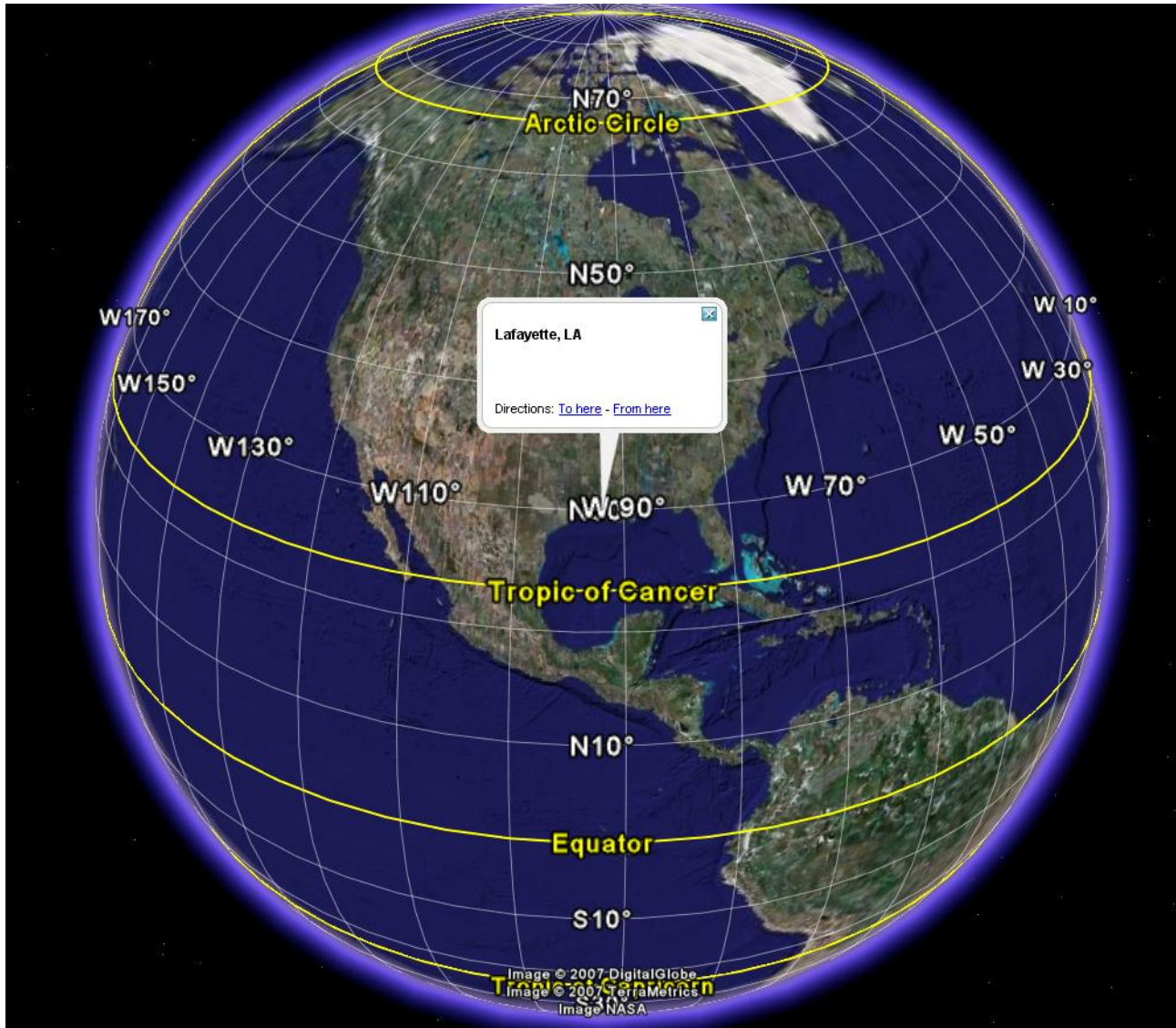
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☆☆☆☆☆
(0 Ratings)

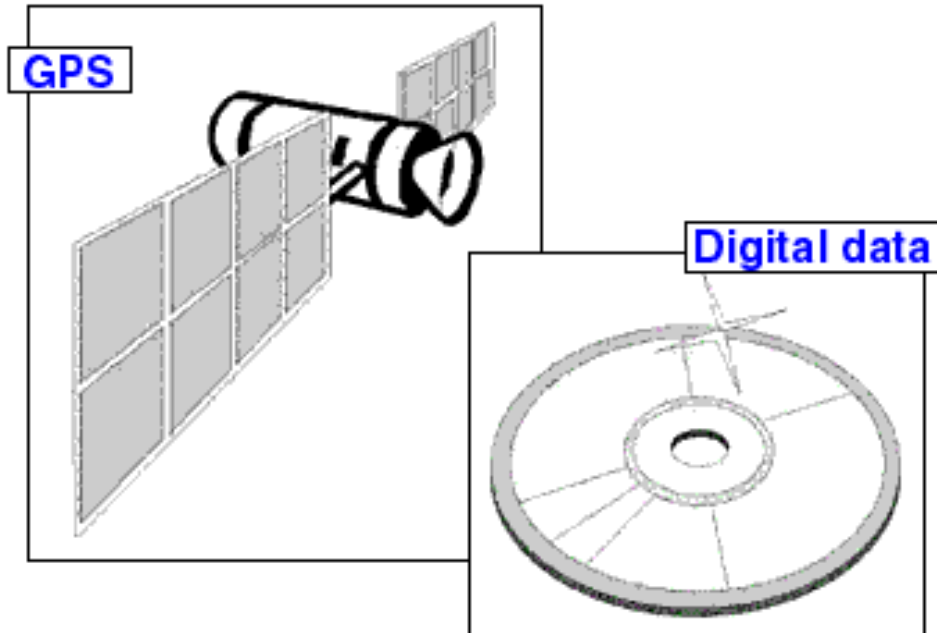
Key concept: Analyzing historic maps in 3D: Eg, David Rumsey collection



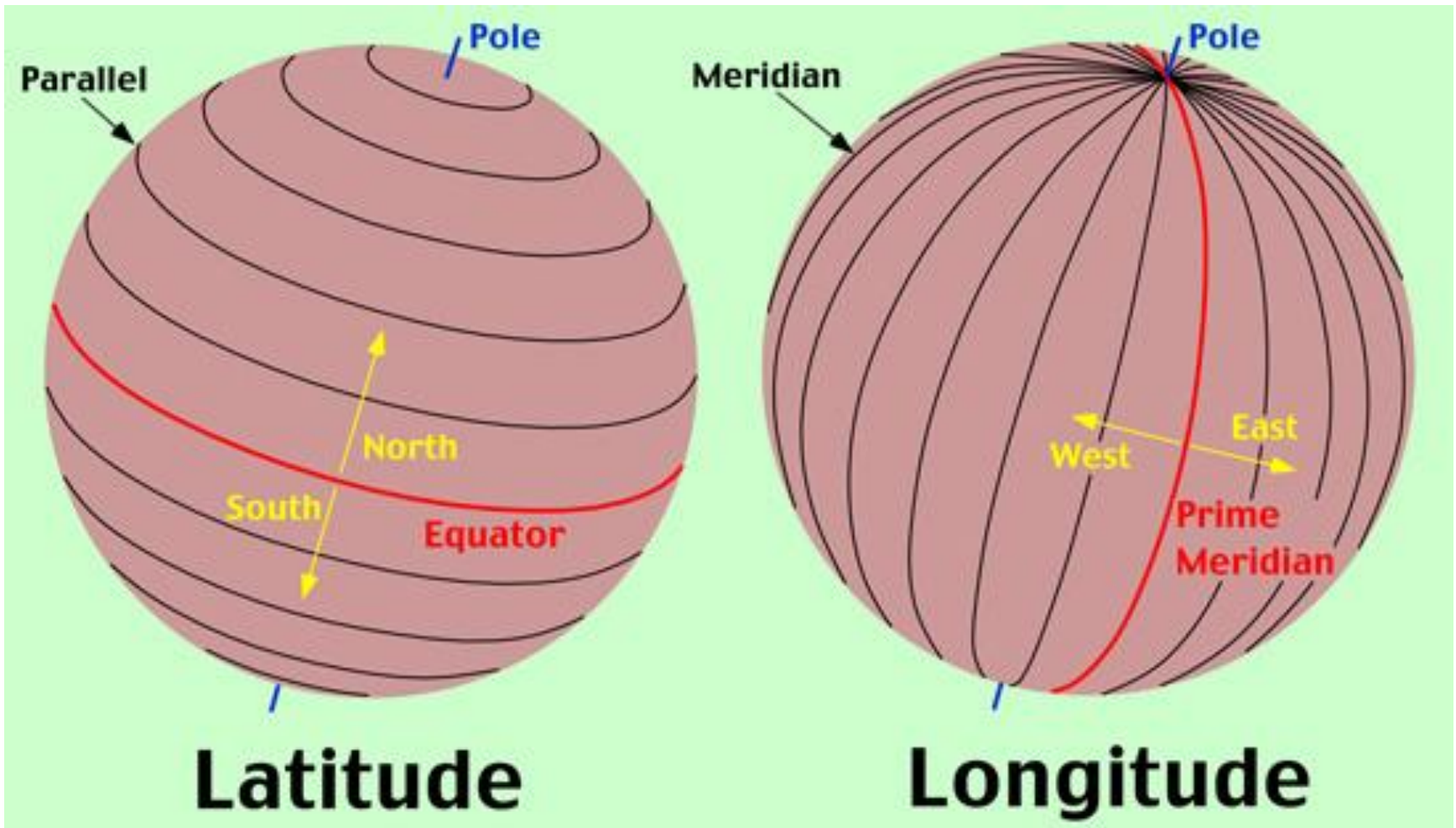
Key concept: Longitude and Latitude



Satellite Imagery



Geographic Coordinate System



Google Earth Download

- <http://earth.google.com>
- Google Earth tutorials:
<http://earth.google.com/support/bin/answer.py?hl=en&answer=176576>

Activity

Use Google Earth to tell a story that involves migration. The story could be about yourself, an historic figure, or even the movement of an entire population. In order to explain the path in which the individual(s) traveled, insert at least 10 placemarks into your Google Earth file. You can also include pictures, hyperlinks, HTML formatting, and video.